REPORT

ON

POSSIBILITIES OF COOPERATIVE MANAGEMENT OF NATIONAL FOREST

AND PRIVATE LANDS

By

U. S. Forest Service

October 30, 1931

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October 31, 1931.

Timber Conservation Board.

Gentlemen:

At the June meeting of the United States Timber Conservation Board, Messrs. David T. Mason and Donald Bruce presented a plan for sustained yield forest management as a solution of American forest conservation problems.

Briefly, the Mason-Bruce proposal was that should the timber land owners of the country adjust their periodic cut to the amount that the lands are capable of growing in their present condition, a net effect would be reduction in output of lumber to the amount that the market would absorb at fair prices and the industry thus put on a stable and profitable basis.

A part of the Mason-Bruce plan was that the timber on the National Forests be brought under agreements with private owners of timber to provide a common plan of management for both privately and publicly-owned land in logical operative units or working circles. Since this suggestion would, if carried out to the extent that was indicated, be of large consequence in the administration of the publicly-owned timber in the National Forests, the Forest Service was requested to make a special study of the project and report on its practicability. Mr. Fred Morrell, Assistant Forester, was requested to direct such a study during the past summer, and he has submitted to me the attached report in response to that request. In order to place before the Board the complete facts disclosed by the study, I am making Mr. Morrell's complete report, as submitted to me, a part of the record.

Following is a summary of the Forest Service findings in relation to the project:

1. The volume of National Forest timber that is so located in reference to private timber as to make its cooperative management feasible is much less than might be inferred from the Mason-Bruce statement, and probably does not exceed 60 billion feet in all.

2. Possibilities of the plan as a means of control of production, with consequent improvement in the financial status of the lumber industry in the West are not large.

3. A cooperative or common form of management for Federal and privately-owned forest land within logical operative units or working circles which will result in sustained yield on the whole is desirable from the public standpoint and of advantage to the private owner wishing to keep his land productive.

4. Cooperative agreements should be limited to those areas of National Forest land which are known to be operative with a return to stumpage equivalent to at least a reasonable minimum price.

5. Agreements should be for not to exceed the length of the first cutting cycle and should stipulate a definite plan of management and operation which cannot be changed without the mutual consent of both parties to the contracts.

6. In all of the sample areas studied mergers of private interest would be necessary as a preliminary to cooperative management agreements with the Government so drawn as to include all of the National Forest timber involved. Question of the practicability of such mergers from private business standpoint has not been a part of the study made. Success of the cooperative management principle does not, however, depend on mergers or large private holdings. It may apply as well to small blocks of private and small blocks of Federal land as to large ones if or where small operations are the most practicable units. Or the Government timber within a working circle might frequently be divided for management purposes between two or more large operators who desired to enter into cooperative agreements.

7. Ability of private owners to enter into such agreements as have been proposed will depend largely on the extent to which they find selective logging practicable. The Forest Service believes that selective logging offers possibilities for financial relief to many owners now operating in the West, and recommends that the lumber industry give this subject most careful consideration. The Forest Service will upon request from private owners be glad to make available all of the data it has on this subject, and to participate as far as possible in the necessary analyses.

8. Supplementary to the report, it should be stated that the cooperative agreement plan as discussed should be predicated upon an adherence to the legal requirement now in effect of having the value of the National Forest timber involved determined after advertisement for sale and also subject to periodic adjustments of price by reappraisal.

Very truly yours,

R. Y. STUART,
Forester.

REPORT

ON POSSIBILITIES OF COOPERATIVE MANAGEMENT OF NATIONAL FOREST AND PRIVATE LANDS

By Fred Morrell, Assistant Forester

INTRODUCTION

Need for Modification of Cutting Practices

Good practice requires that forestry begin with the harvesting of the first crop. Yet over a period of 25 years during which the Forest Service and other agencies have through education, legislation, and example endeavored to promote the growing of forests on privately-owned lands, few owners have considered it practicable to modify their cutting practices.

Barring some move very much greater and far-reaching than has yet been undertaken toward acquisition of timber lands by Federal, State, or other public agencies, it appears that about 90 per cent of the timber that will be cut during the next quarter of a century will come from privately-owned lands.

It is evident that to have any appreciable effect on methods of timber harvesting during the present generation of time effort must be concentrated on the land now in private ownership. Much thought has already gone into this subject, and some constructive things have been accomplished. The Clarke-McNary Act of June 7, 1924, would, it was hoped, bring about improved cutting practices on a large percentage of the country's forest land, through public assistance offered in fire protection, and relief from taxation that would follow recommendations for better taxation systems. Anticipations have not been realized. Protection has been improved, but methods of cutting have not.

There are some observers who believe that the Nation's forest needs may be sufficiently assured through adequate protection, and through measures of relief from taxes on cut-over land, and that no serious concern need, therefore, be given to the question of how timber land is cut.

But improved cutting practices are a necessary part of any adequate protection program which depends on participation by the land owners. Our national policy is predicated on the assumption that the owner of cut-over lands will pay a share of the protection costs, and annual taxes based on the value of the land for growing timber. Land left in the condition of most cut-overs in the West does not warrant that investment by a private owner, and it is becoming more and more apparent that Western forest land is not suitable for private ownership if it does not support a stand of commercial timber or of advanced young growth from which returns in form of marketable wood may be expected within a period of not to exceed 30 to 40 years. In order to have a second cut of sawlogs within this length of time, Western timber must be selectively logged.

That sustained yield offers the way to a balanced and orderly production is as old as forestry itself. As a first essential toward sustained yield there must be an intent on the part of the land owner to hold his land. As a general rule ownership of forest land in large tracts has been incident to ownership of the timber on it and manufacturing plants have been installed not to harvest the sustained yield, but to cut the accumulated growth. Installed milling capacity is almost invariably in excess of productive capacity of the land which it is to cut over.

Mason and Bruce advocate bringing timber growth and plants into consonance through the merging of sufficient land holdings tributary to

certain plants, to maintain the plants by cutting of the sustained yield. One of the biggest obstacles in the way of that is the fact that forest lands in the West are too largely made up of land with mature timber ready for cutting and cut-over land with little or no advanced reproduction. Thus the owner is forced to carry a large overstock of timber ready for market and increasing slowly or not at all in intrinsic value and a large acreage of cut-overs which while increasing in intrinsic values will produce no marketable material for a long time to come.

Cooperative management of publicly and privately-owned timber land as proposed by Mason and Bruce would, to some extent, provide a substitute for a stand of timber of evenly distributed age classes, which is essential to most economic management of a forest property for sustained yield production. National Forest timber is as a general rule less accessible and therefore less economically ripe than is the privately-owned timber. Much of it, as will be shown in more detail later, has no present value for conversion purposes and cannot be marketed until the more available private lands have been cut-over. This timber would, under the Mason-Bruce proposal, constitute a reserve which would supply the cut during the period that must elapse between the first and second cut on the land of the cooperating owners. Viewed then from the standpoints of business expediency which must control the use of private capital and a future timber supply which is the primary interest of the public, the proposal seems to have merit and we may proceed to examine into the extent of its possibilities from an operative standpoint.

Quantity and Accessibility of Timber Involved

The Mason-Bruce presentation divided the present commercial stand of timber into three zones of accessibility as follows: "Zone 1 is defined as that in which the timber would have a positive realization value based on average market conditions existing from 1924 to 1929, inclusive. Zone 2 is defined as that in which a positive realization value will be found when the market shall have improved $5 per M over 1924-1929. Zone 3 includes the timber which will require from $5 to $10 or even more market improvement over 1924-1929 before it has any realization value."

The Forest Service has made a revised estimate of the quantity of commercial timber, as a part of its Project No. 1 study, and has also made an estimate of accessibility following the Mason-Bruce zone classification scheme. The new Forest Service figures will be used in this report.

Since cooperative management of privately and publicly-owned timber would be possible only where there are blocks of timber land, of which the public and private owners each control a substantial part, the study first sought to determine the regions in which this condition exists.

From the study by the Regional offices of the Forest Service the purchase areas, which are all located east of the Great Plains, were found to contain no immediate possibilities of such cooperative management, first, because the Government is buying cut-over lands which contain only relatively small quantities of commercial timber, and, second, because the privately-owned forest land intermingled with and adjacent to a large percentage of the Government holdings is in small ownership constituting parts of farms or other land holdings and

not, therefore, adapted to a merging such as would be necessary under the plan. It was decided from the study made that, with the exception of the National Forests in Arkansas, the Federal holdings east of the Great Plains contain at this time no considerable possibilities for the plan proposed, though some of them may be well adapted to such a scheme when the timber, both public and private, shall have grown into commercial stands.

In the Rocky Mountain States, including Arizona, New Mexico, Utah, Nevada, Colorado, Wyoming, Idaho, south of the Salmon River, and Montana east of the Continental Divide, and the timber lands in South Dakota, revised stand figures show approximately ~~645~~ 20 billion feet in private ownership and 150 billion feet in the National Forests.

Much of the privately-owned timber in this region is in small scattered ownerships, and there are only a very few areas that could be blocked up so as to constitute sizeable units under one ownership. Moreover, even where this could be done the areas are not usually so located with reference to National Forest timber as to make cooperative management practicable. Here, as in the East, there seem to be no considerable possibilities in the plan. This left for consideration the West Coast States: California, Oregon, and Washington; Idaho north of the Salmon River; and Montana west of the Continental Divide. All of the discussion which follows is in reference to this Region.

The following table gives the stand and accessibility estimates for the region under consideration. Volume is expressed in billion board feet lumber tally and stand figures and percentages have been rounded off to the nearest full number.

Quantity and Accessibility of Northwestern Timber

	Total	Zone 1	Per cent	Zone 2	Per cent	Zone 3	Per cent
Private	625	375	60	168	27	82	13
N. F.	398	121	33	163	41	114	26
State	33	17	52	9	27	7	21
Indian Res.	23	14	60	5	22	4	18
Other pub.*	44	28	65	9	20	7	15
	1,123	555	50	354	31	214	19

*Includes recaptured land grants in Oregon administered by the Department of the Interior.

If economic influences take their natural course, the most accessible timber will be cut first, i.e., the timber in Zone 1 is that with which operators will be chiefly concerned in the immediate future. Of this there is:

In private ownership.....	375 billion ft.	67 per cent	
In National Forests	121 "	" 22 "	"
In other public.....	59 "	" 11 "	"
Total	555 "	" 100 "	"

an amount sufficient to maintain the average cut in the Northwest during the past five years for a period of over 30 years.

From these figures it might be assumed that during the next 30 years (assuming present rate of cutting, or a shorter or longer period if cutting increases or decreases), about one-fifth of the Northwestern cut will logically come from the National Forests, and that, therefore, policies governing sale of National Forest timber will have an important bearing on the Northwestern cut.

But this would not be a safe assumption. Although the National Forests contain 22 per cent of the timber in Zone 1, the present cut of

sawed lumber from them amounts to less than 6 per cent of the total. Neither is this cut increasing rapidly. During the 15 year period, 1915-1929, the percentage of the sawed lumber cut in the five Northwestern States coming from the National Forests has increased about 2 per cent, i.e., in 1915 it constituted about 4 per cent of the cut and in 1929 about 6 per cent. From such analysis as the writer has been able to make, it does not appear that the trend is likely to be substantially changed during the next two or three decades.

Perhaps one reason for the light cut of National Forest timber in the past has been the fact that the Forest Service has had minimum stumpage prices below which it did not sell timber and the private owner has in times of poor market been compelled to sacrifice his stumpage. According to Mason and Greeley, the return for privately-owned timber cut in the West during the 1924-1929 period was less than $1 per thousand, while the average price received for National Forest timber during that period was about $2.75 per thousand. The timber in Zone 1 is that which under 1924-1929 conditions could be operated with <u>any</u> return to stumpage. Only about 40 billion feet of National Forest timber would under 1924-1929 prices show a return to stumpage equal to or greater than established minimum stumpage rates.

A more important reason why the ratio of private to National Forest timber cut in the five northwestern States has remained nearly stationary is that fully 80 per cent of National Forest cut has been of timber, constituting a necessary part of an economic logging operation undertaken for the primary purpose of liquidating the privately-owned timber. The percentage cannot be substantially increased except as logging operations

move into the more inaccessible areas. Nor can it be greatly decreased without making it impossible to log the privately owned timber with which it is associated.

If present methods of logging privately-owned lands continue, it appears unlikely that the cut from the National Forests will have increased to more than 10 or 12 per cent of the total at the end of another 20 years. But should operators in the Northwest adopt a selective logging system that will distribute an equal cut over a greater acreage the National Forest timber will come more rapidly into demand, and we may expect a greater increase in cut from the National Forests. In Zone 2, nearly half of the timber is in the National Forests, and as the cut advances into this zone the National Forest timber will supply a greater part of the cut.

Possibilities of Selective Logging

It is well known that one of the big difficulties of the lumber business in the Northwest has been the high percentage of lower grades and inferior species which will not stand the cost of transportation to distant markets. With the rapidly diminishing supply of virgin softwood timber in other regions and the amount of second-growth that is coming into the picture, it seems evident that hope for the industry in the Northwest lies in its high quality material. Examinations of several properties made by the firm of Mason and Stevens, and by the Forest Service, as well as the experience of a few operators, indicate that it will be of great advantage to the industry as a whole to adopt a policy of selective logging, or high grading its stands, as a matter of present economic returns.

Leaving the smaller trees and the inferior mixed species, of course, results in a lower cut per acre. On some areas the cut under economic selective logging may average only half as much as under the old clear cutting system. In that event, the amount of timber to be logged to an established plant will be reduced, unless more acreage is secured, or it is feasible to return for a second cut immediately after going over the land the first time. Opportunity to buy Government timber on which he could continue operations until he could return to his own land for a second cut would be of great advantage to the operator. To the extent that such conditions could be created they would make the Mason-Bruce plan look the more feasible from the landowner's standpoint, and it is important that in considering their proposal the feasibility of selective logging be kept in mind.

Possibilities of listing cut-over land under the "reforestation" tax laws of Oregon, Washington, Idaho, and California, after it has been cut-over selectively, have an important bearing on the practicability of the Mason-Bruce plan. It is generally recognized that some measure of protection for cut-overs is necessary as insurance for uncut stands and improvements and State laws require it. With State and Federal assistance in this, and with taxes based on the value of the land for timber growing, a company's total carrying charges may not be more if it holds its selectively cut-over areas than they will be under the old plan of considering cut-overs as a liability to be shed as quickly as possible.

Practicability of the Plan from an Operation Standpoint

Sample and Studies

Local forest officers and others acquainted with conditions in the Northwest were consulted as to location of areas which seemed to offer most promise from an operative standpoint for management under cooperative plans. Six such areas were selected for detailed study. Two in California and one each in Washington, Oregon, Idaho, and Montana. The table which follows gives the acreage and stands by ownerships, length of first cutting cycle, and permissible annual cut for each of these areas.

The area classified as "noncommercial" is made up of cut-overs and burned, partially restocked but not containing timber of commercial size. Length of cutting cycles are set in accordance with Forest Service methods of marking in similar stands. They are the longest to which the Forest Service would likely agree in any cooperative management plan, but might be shortened should a selective system that would leave a larger residual stand, with a consequent earlier return for a second cut appear desirable.

Area and Volume in Sample Areas, by Ownership

	Area in thousand acres								Stand in million feet lumber talley									
	Commercial stands				Noncommercial stands													
	Private	N. F.	Other public	Total	Private	N. F.	Other public	Total	Private	Per cent	N. F.	Per cent	Other public	Per cent	Total	Length cutting cycle	Annual cut in million feet L.T.
1	544	215	211	970	317	422	69	808	6193	70	955	11	1697	19	8845	35	250
2	354	424	54	832	189	853	16	1,058	1129	54	851	40	120	6	2100	32	65
3	62	42	..	104	57	48	..	105	1637	56	1274	44	..	..	2911	55	47
4	124	192	..	316	13	40	..	53	2245	42	3080	58	..	..	5325	60	70
5	104	219	..	323	..	..	..	..	1462	36	2615	64	..	..	4077	60	54
6	70	105	..	175	117	3	..	120	3000	30	7186	70	..	..	10186	100	160

Areas 1 and 2 are in the pine-mixed type and the management plan is based on the assumption that 85 per cent of the cut during the first cycle would be pine, since the mixed species are not profitable to log under present conditions. Ability of the area to sustain the cut after the first time over would depend on the merchantability of the mixed. If at the end of 30 to 35 years the inferior species are operable there is an ample supply of timber to maintain or even increase the cut suggested.

Area No. 3 is not an operative chance under 1924-29 market conditions, because of inaccessibility. Since neither private nor Government timber can be operated until prices very substantially advance there would be no purpose in attempting to agree on a cooperative management plan at this time, but the area offers possibilities for agreement later.

Area No. 4 will support an increased cut during the second and subsequent cycles on account of the noncommercial stands that will have reached maturity. The annual cut on Area 5 would probably have to be somewhat reduced after the first cutting cycle. Area No. 6 is a fir stand, and a clean cutting system was planned in the study made. On account of the relatively large area of advanced young growth that will come into maturity before the end of the first cycle the total cut shown is greater than present commercial stand. The sustained yield of the area should equal the cut indicated, and under selective logging the length of cutting cycle might be greatly reduced. Length of cutting cycle on Areas 3, 4, and 5 would also be reduced under a system of

marking that would result in a lighter cut than that practiced on National Forest lands, and under a light selection system to extend over the first cutting cycle would perhaps not need be longer than 50 years in any of these cases.

It will be noted that the proportion of National Forest timber varies from 11 per cent on Area No. 1 to 70 per cent on Area No. 6, and that the privately-owned from 30 per cent on Area No. 6 to 70 per cent on Area No. 1. Area No. 1 is considered to be an impracticable cooperative unit on account of the small proportion of Government timber involved. The company at present operating in this unit could hardly afford to enter into agreements that would control the management of its own property for the relatively small percentage of Government stumpage that is available. Thus, four of the six areas studied represent possible chances for application of the cooperative plan. In all of these four cases large mergers of private interests would be necessary since in not more than one case does a single company own as much as 50 per cent of the privately-owned timber involved.

General Applicability of Plan

It has been shown that whereas the proportion of privately-owned to National Forest timber operative under 1924-1929 conditions is approximately 3 to 1, the ratio of cut is about 15 to 1, and it was pointed out that the small cut of National Forest timber was due in part to the fact that there is only a relatively small amount which is so located as to make it a logical part of economic logging operations installed primarily for the removal of privately-owned timber. As cutting advances into the less accessible areas of private land, this condition

will change in a degree, but a major percentage of the larger private timber holdings are so located that improvements constructed for logging them would not tap any National Forest land. Likewise, a large percentage of National Forest timber is so located that it does not fit into a plan of management with privately-owned tracts. A considerable percentage is in small isolated blocks adapted best to small mill operations, and another large percentage will eventually constitute operative chances not so located geographically as to make cooperative management with privately owned land practicable. In a comprehensive memorandum on this point, Mr. F. E. Ames, Assistant Regional Forester, Portland, Oregon, has estimated that there is a total of approximately 44 billion feet of National Forest timber in Washington and Oregon that would logically block up in large holdings for cooperative management with about an equal amount of privately-owned. The total for the five state region under discussion would probably not exceed about 60 billion of National Forest and an equal amount of privately-owned timber. Taken by itself, however, this is a large amount, and constitutes sufficient possibilities to warrant putting the plan into effect if it appears to be mutually advantageous. It does not, however, appear that large holdings need be essential to the operation of the cooperative management principle where small logging operations are the most practicable or economical. Cooperative management plans might be entered into which effect the smaller areas necessary to a continuous supply of timber for the small plant or plants.

It has also been pointed out that the policy of the Forest Service to not sell timber below certain minimum stumpage prices has had the effect of holding down the cut from the National Forests and that only

about 40 billion feet of National Forest timber in the region would show returns to stumpage equal to or greater than established minimum rates under 1924 to 1929 prices. The writer does not believe that the Forest Service should, in considering such agreements as Mason and Bruce propose, depart from the minimum stumpage price principle. To do so would amount to giving the cooperating companies an option to purchase Government timber at nominal prices where that would be necessary for them to operate at a profit. The companies holding such agreements would be in competition with others cutting only privately-owned timber and the general effect would be to discourage private investment. It is therefore, believed that cooperative agreements would necessarily be limited to that timber which both the Forest Service and the cooperating company believed operative at minimum stumpage prices to be fixed at the time the agreement was entered into. This would serve to further restrict the application of the plan.

Public Aspects

In making the sample area studies attention was given to the question of the effect that cooperative management would have on the industrial development and income of local communities. If allocation of a block of National Forest timber to a particular plant would mean the manufacture of timber in a different county or community from where it would be milled if handled as an independent block that would be something which the Forest Service should take into account because it would amount to putting up a barrier against the normal development in the county. Likewise, if entering into cooperative agreements would serve to delay

the cut of National Forest timber beyond the time when bona fide purchasers might apply for it to be operated independently, thus depriving the county of industrial development and returns from sale of the timber, that should be taken into account. While the National Forest timber is a public property to be handled in the interest of the whole country, there is also an obligation to the communities in which it is located to allow a normal economic development so far as that can be done without serious consequences to the country at large, and there is an obligation on the part of the public at large to so far as possible compensate the local community for any sacrifice that it may be required to make in the public interest. The sample area studies did not disclose any serious complications along this line, but they might easily appear on other areas. It is not believed that objections of this nature are insurmountable under present legislative authority, but they do point to the desirability of a study into the method of Federal payments to counties, such as is recommended by the Committee on Public Forests.

The advantages to the public in having sustained yield practice extended to privately-owned lands are obvious and need no discussion here. Likewise, advantage to the public in having the timber lands which form a part of a logical operative unit in which its timber is located handled in the same manner as the Government timber are obvious. Where Government and privately-owned timber should for economic handling be taken out over the same improvements, it is essential for economic production that the lands be logged together, and while that can be done in the first cut even though radically different systems of cutting are practiced, it may